SWBAT

answer AP style questions about Newton's Laws

Sep 4-7:31 AM

SECA CP Physics
Tuesday 29 March 2016

Welcome!!!

PEDs with Passing

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Room C-244

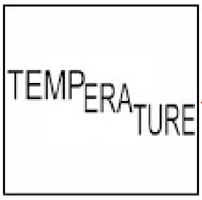
Centering (puzzle)

- Show me SchoolView if you want phone in class...

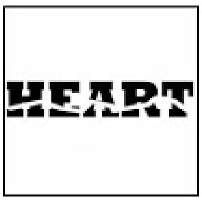
HOMEWORK: Solve partner's push friction problem

Opening Activity: Quick Write

What is Newton's 3rd Law of motion? How would it apply to an apple and the earth?



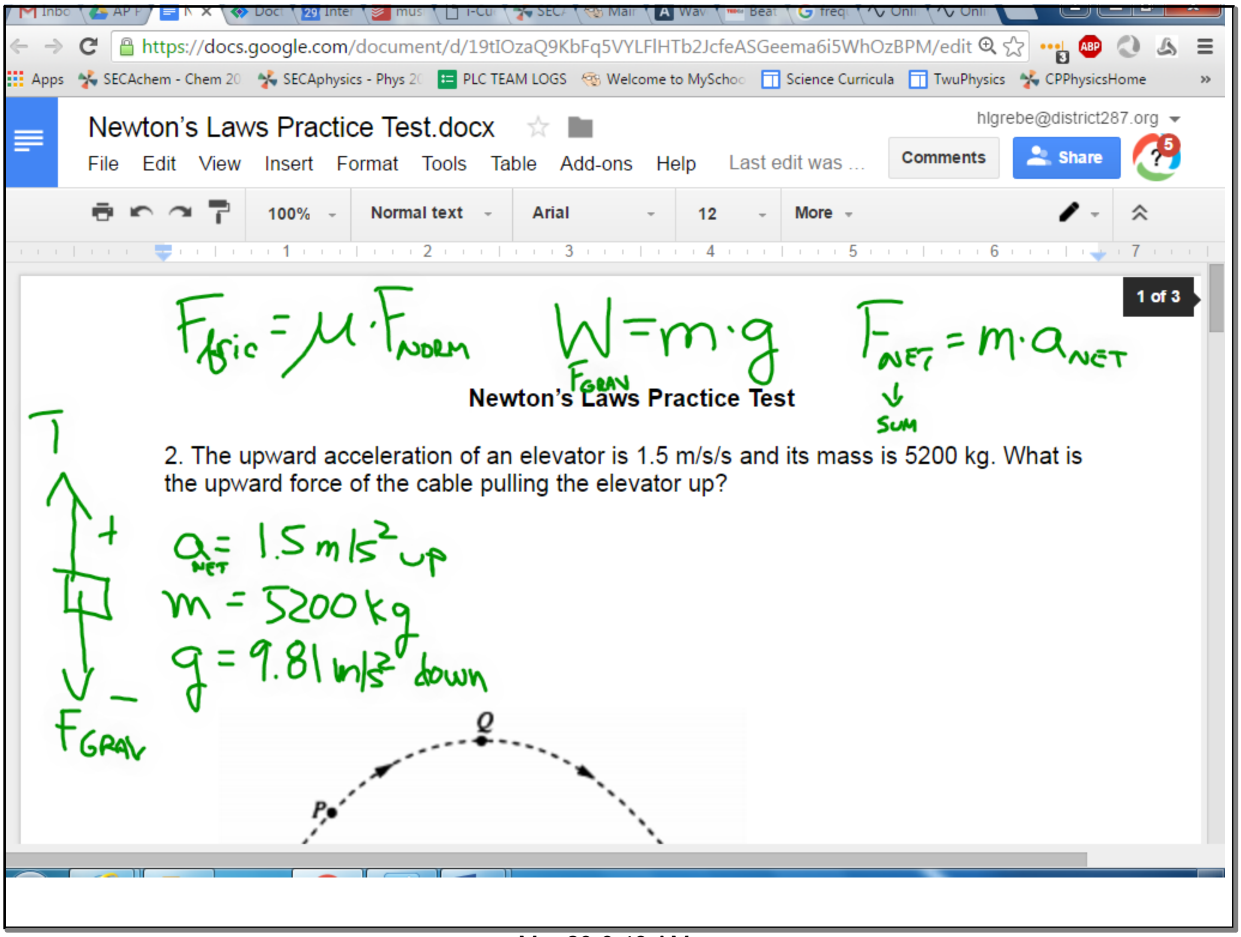
Temp Rise? falling temp?
Temp Drop?



Broken heart

http://wordsandnotesandchords.blogspot.com/2011/05/words-puzzles-wuzzles.html

Sep 7-7:04 AM



Newton's Laws Practice Test.docx

$F_{fric} = \mu \cdot F_{NORM}$ $W = m \cdot g$ (F_{GRAV}) $F_{NET} = m \cdot a_{NET}$ (NET → SUM)

Newton's Laws Practice Test

2. The upward acceleration of an elevator is 1.5 m/s/s and its mass is 5200 kg. What is the upward force of the cable pulling the elevator up?

$a_{NET} = 1.5\ m/s^2$ up
$m = 5200\ kg$
$g = 9.81\ m/s^2$ down

T, +, −, F_{GRAV}

Mar 29-9:48 AM

What we should have solid:

Memorize our ~~5~~ 8 vocab cards, units, vector or not, definition, formula

Be able to answer distance vs displacement questions

Be able to make measurements of real-life motion. Know what is likely to make timing things difficult and how to get more reliable timing results

Be able to convert between miles and meters, between hours, minutes, and seconds

Be able to calculate speed = dist/time and velocity = disp/time

Know what all of the symbols in the UAM equations stand for and mean

Be able to turn a UAM word problem into a list of knowns and unknowns

Be able to pick the equation with those 4 things in it

Be able to put the knowns into that equation

(Be able to solve for the unknown)

→ PROJECTILES: V_x IS CONSTANT; $a_y = -9.81\ m/s^2$ (V_y CHANGES) PG 42

PG 43 TIME, Δt, CONNECTS X & Y

PG 53 1ST LAW,

PG 49 69 VECTORS INTO X & Y, ADD VECTORS (SOH-CAH-TOA)

PG 59 DIFFERENCE BETWEEN MASS & WEIGHT

PG 61 NET FORCE

PG 63 FREE BODY DIAGRAMS $F = m \cdot a$

PG 70 $F_F = \mu \cdot N$

QW every day to review - gather responses to front board.

Dec 4-9:15 AM

InterActive Notebook - Table of Contents

Unit__________ Chapters__________ Date__________

Sep 5-9:09 AM

We need a test soon... Let's start practicing

SURVEY

Group work: Pick a role

* Notes/Equations
* Diagramer
* Recorder
* Time manager
* Overview / Eye on the Prize

$$m \cdot a_{net} = F_{NET} = T - W$$

7800N

$$7800N = T - 50{,}960N$$

$$58{,}760N = T$$

Mar 28-9:07 AM

Pg 75: Newton's 3rd Law

In outer space, how do space vehicles change direction, speed up, or slow down?

http://www.youtube.com/watch?v=P8sUVhR7xjE

SHOOT OR THROW SOMETHING THE OPPOSITE WAY [WALL-E & EXTINGUISHER]

Demo: 2 carts

What do you think is going to happen?

PULLER, HOLDER, BOTH

What did we observe?

NO MATTER WHO PULLED/HELD, BOTH MOVED

Two spring scales:

BOTH SCALES READ THE SAME NO MATTER WHICH ONE OR HOW HARD WE PULL.

Newton's 3rd Law:

For every **action** force, there is an equal and opposite **reaction** force!

SIZE DIRECTION (VECTOR)

I push on the wall. Does the wall push back?

YES, OR I'D FALL OVER

YOU CAN'T TOUCH WITHOUT BEING TOUCHED.

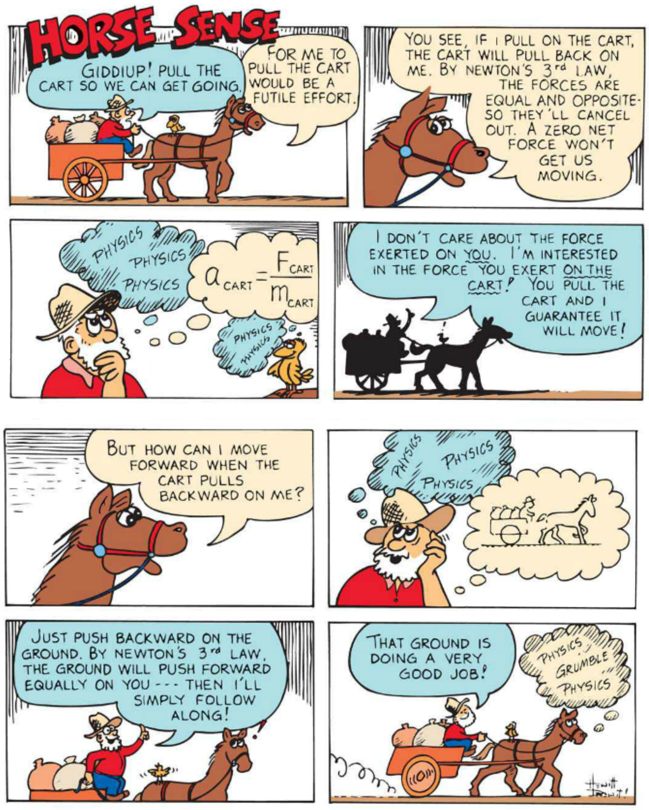
HORSE & CART:

HORSE MOVES BY PUSHING ON THE GROUND

STORY OF THE PUPPY

$$m_{puppy} A = F_{puppy} = F_{bus} = M \cdot a_{bus}$$

Mar 17-8:05 AM



CHAPTER 7 NEWTON'S THIRD LAW OF MOTION— ACTION AND REACTION 115

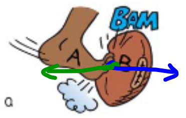
Mar 29-10:37 AM

Worksheet

- Forces shown as arrows
  - start at the point of contact

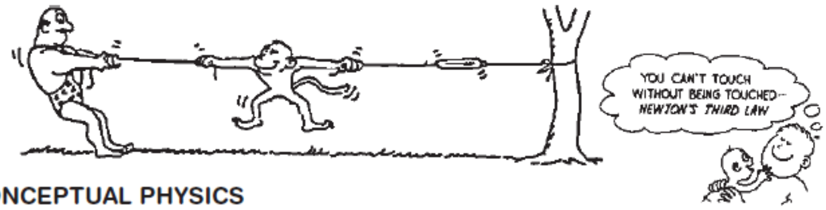
ACTION FORCE — FOOT KICKS BALL

SAME SIZE & OPPOSITE DIRECTION



REACTION FORCE — BALL HITS FOOT

2. Draw arrows to show the chain of at least six pairs of action-reaction forces below.



CONCEPTUAL PHYSICS

MC on back: circle up, thumbs

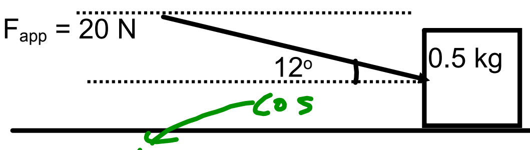
Sep 21-2:13 PM

Trade questions with someone...

F_{app}, m, ANGLE, μ

Pg 49, 69, physicsgrebe2

If I push on a block like in this diagram, what are the x & y components of that force?



$\mu = 0.2$

X = ADJ

H = 20N, 12°

y = OPP

SIN

SOH → $\frac{opp}{20} = \sin(12) \cdot 20$

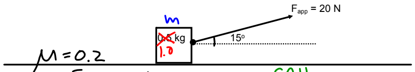
opp = NEGV −4.15N DOWN

CAH → $\frac{adj}{20} = \cos(12) \cdot 20$

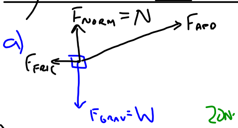
= 19.56N

Mar 16-7:56 AM

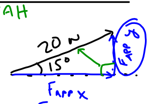
Putting it all together...



a)



b) CAH



$20N \cdot \cos 15° = \frac{F_x}{20N} \cdot 20N$

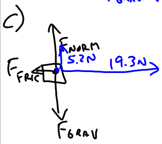
$F_x = 19.3\ N$

SOH

$20N \cdot \sin(15°) = \frac{F_y}{20N} \cdot 20N$

$F_y = 5.2N$

c)



d) BALANCED FORCES $\sum F = 0$ (sum)

$5.2N + F_{NORM} - F_{GRAV} = 0$, where $F_{GRAV} = m \cdot g$

$5.2N + F_{NORM} - (.5kg)(9.81 m/s^2) = 0$ (1 kg)

$5.2N - 9.81N + F_{NORM} = 0$

$-4.61N + F_{NORM} = 0$

$F_{NORM} = 4.61N$ UP

$F_{FRIC} = \mu \cdot F_{NORM}$

$F = \mu N$

e) $\mu = 0.2$

$F_{FRIC} = ?$

$F_{NORM} = 4.61N$

$F_{FRIC} = \mu \cdot F_{NORM}$

$= 0.2(4.61N)$

$= 0.922N$ LEFT

f) $\sum F_x = m \cdot a_x$

$F_{APPx} - F_{FRIC} = m \cdot a_x$

$19.31N - .922N = 1.0kg \cdot a_x$

Mar 14-7:43 AM